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REMARKS

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Claims 1-20 are pending in the application. In the Amendment, claims 12 and 17 are amended for clarity. It is respectfully submitted that the Amendment does not introduce new matter into the above-identified application. Clean copies of these claims without brackets or underlines are provided in the attached Appendix.

The Office Action rejects claims 1-20

"under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The Examiner is unclear as to what is meant by the statement "ratio of an *acoustic mass* of the internal vent to the *acoustic mass* of the external vent is in a range of approximately 3/1 to 7/1," as claimed in claims 1 and 11. This also applies to ratio 15/1 to 30/1, as claimed in claims 6 and 16."

This rejection is respectfully traversed.

It is well settled that there is no requirement in 35 U.S.C. §112 or anywhere else in the patent law that a specification convince persons skilled in the art that the assertions in the specification are correct. In examining a patent application, the P.T.O. is required to assume that the specification complies with the enablement provision of Section 112 unless it has "acceptable evidence or reasoning" to suggest otherwise. The P.T.O. thus must provide reasons supported by the record as a whole why the specification is not enabling. Then and only then does the burden shift to the applicant to show that one of ordinary skill in the art could have practiced the claimed invention without undue experimentation. See Gould v. Mossinghoff, 229 U.S.P.Q. 1, 13-14 (D.D.C. 1985), aff'd in part, vacated in part, and remanded sub nom., Gould v. Quigg, 822 F.2d 1074, 3 U.S.P.Q.2d 1302 (Fed. Cir. 1987). It is respectfully submitted that the mere assertion that it is unclear what a recited limitation means by the Examiner clearly does not

satisfy the minimum requirements set forth in the patent law for establishing a "prima facie" case of non-enablement by the U.S. Patent and Trademark Office.

Moreover, while the term "undue experimentation" does not appear in the statute, *i.e.*, 35 U.S.C. §112, first paragraph, it is well established that enablement requires that the specification teach those of ordinary skill in the art to make and use the present invention without undue experimentation. The key word is "undue," not "experimentation." In re Wands, 8 U.S.P.Q.2d 1400,4 (Fed. Cir. 1988).

"Hence, the issue becomes whether is would take undue experimentation for one of ordinary skill in this art to produce the speaker recited in any one of claims 1, 6, 11, or 16. Factors to be considered in determining whether a disclosure would require undue experimentation include:

- (1) the quantity of experimentation necessary,
- (2) the amount of direction of guidance presented,
- (3) the presence or absence of working examples,
- (4) the nature of the invention,
- (5) the state of the prior art,
- (6) the relative skill of those in the art,
- (7) the predictability or unpredictability of the art; and
- (8) the breadth of the claims.

In re Wands, 8 U.S.P.Q.2d 1400,4 (Fed. Cir. 1988). Since the entire basis of the 35 U.S.C. §112, first paragraph, rejection is a single assertion in the Office Action, it is evident that the Office Action has not even attempted to demonstrate why one of ordinary skill in the art would require undue experimentation in order to make and use the loudspeaker recited in claims 1, 6, 11, 16. While the burden of proof is such that the Applicant need not bolster his position with arguments, Applicant will address several of the enumerated items in order to advance the prosecution on the merits.

With respect to Item (1), Applicant submits that one of ordinary skill in the art would require virtually no experimentation in order to practice the loudspeakers recited in the pending claims. The clause that the Office Action questions recites twin concepts of acoustic mass and a ratio between the acoustic masses. Since the concept of a ratio is elementary math, it is believed that the rejection centers around the concept of acoustic mass.

Applicant respectfully submits that the concept and use of acoustic mass is at least well known, if not universally employed, to speaker designers of ordinary skill in the art. For example, U.S. Patent No. 6,212,284<sup>1</sup> discloses that the favorable reproduction behavior of a base reflex speaker can best be explained by means of acoustic analogies or electrical equivalent circuit diagrams (in this connection, see R. Small, "Vented Box Loudspeaker Systems" AESJ, June 1973, starting on p. 363). According to this, it turns out that in bass reflex boxes, the two reactive components of the *speaker* (=mass and flexibility) are supplemented by two additional reactive components, the flexibility of the housing volume and the *acoustic mass* of the bass reflex tube (also called the port). From the *acoustic* analogy or the electrical equivalent circuit diagram, it becomes clear that three resonance frequencies occur in devices of this kind. See the paragraph bridging columns 3 and 4. Moreover, U.S. Patent No. 4,549,631 discloses speakers for which equivalent speakers are electrically modeled. In particular, the acoustic masses associated with port tubes 19 and 20 are represented as capacitors 43 and 48, respectively. See column 3, lines 2-14.

Applicant submits that since the concept of acoustic mass is pervasive in the art of speaker design, as evidenced by the references already of record and newly cited U.S. Patent No. 6,212,284, and since the concept of ratio is clearly understood by one of ordinary skill in the art,

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<sup>1</sup> Copy attached. Also attached is a PTO-1449 Form for the Examiner's convenience in indicating that the '284 patent has been made of record. It is respectfully submitted that since the '284 patent is being cited as evidence, under the M.P.E.P. guidelines, an Information Disclosure Statement is not required.

the clause "wherein a ratio of an acoustic mass of the internal vent to an acoustic mass of the second external vent is in a range of approximately 3/1 to 7/1" used in claims 1 and 11 and the clause "wherein a ratio of an acoustic mass of the first external vent to an acoustic mass of the second external vent is in a range of approximately 15/1 to 30/1" used in claims 6 and 16 is clearly understood by one of ordinary skill in the art. Thus, since the claims clearly set forth both the elements and the relationship between selected elements, one of ordinary skill in the art would require virtually zero experimentation to make and use the claimed loudspeakers.

With respect to Item (2), Applicant submits that (2) the amount of direction and guidance presented is sufficient to make and use the claimed invention. Stated another way, Applicant cannot fathom what additional guidance one of ordinary skill in the art would require in order to practice the claimed invention.

With respect to Item (3), it is respectfully submitted that several working examples of the inventive loudspeakers are illustrated in the figures and described in the specification. Thus, there is no lack of working examples.

With respect to Item (4), Applicant submits that the nature of the invention is a loudspeaker, which is found in the mechanical and electrical arts and, thus, in the wholly predictable arts.

With respect to Item (5), Applicant submits that the state of the prior art is clearly reflected in the art of record. In particular, the primary reference applied in the 35 U.S.C. §103(a) rejections, discussed below, defines its invention in terms of the acoustic masses of several port tubes.

With respect to Item (6), Applicant submits that the relative skill of those in the art is clearly established by U.S. Patent Nos. 6,212,284 and 4,549,631 (Bose).

With respect to Item (7), the predictability or unpredictability of the art, Applicant submits that the comments made regarding Item (4) clearly indicate that the invention lies in the predictable arts, as opposed to the unpredictable arts such as the chemical and biotech arts.

Finally, with respect to Item (8), the breadth of the claims, Applicant submits that the Office Action did not and cannot raise this issue.

For all of the reasons enumerated above, Applicant respectfully submits that the pending claims are fully enabled by the specification as originally filed. In that the Examiner has not set forth any evidence in support of the non-enablement rejection while the Applicant has submitted virtually incontrovertible evidence and argument, the Examiner is respectfully requested to reconsider and withdraw the 35 U.S.C. §112, first paragraph, rejection of claims 1-20.

Turning to the substantive rejections, the Office Action rejects claim 1-20 under 35 U.S.C. §103(a) unpatentable over Tamura (JP 4-30 1998). According to the Office Action, Tamura teaches a loudspeaker comprising an enclosure (1); transducer (3); internal vent/first means (6); first external vent/second means (7) and second external vent/third means (8). The Office Action admits that Tamura fails to specifically teach that the ratio of the *acoustic mass* of the internal vent to the second external vent is *approx.* 3/1 to 7/1 or that the ratio of the *acoustic mass* of the first external vent to the second external vent is *approx.* 15/1 to 30/1. In order to overcome the defect in the applied reference, the Office Action states that, *based on the Examiner's interpretation of "acoustic mass*, it is believed that it would have been obvious to one of ordinary skill in the art at the time of the invention to provide vents having different "acoustic masses" i.e., lengths and/or cross sections, depending on the resonant frequency of the system desired. Additionally, the Office Action asserts that it is well known in the art that the port size taken in combination with the size of the subchambers determines the degree of attenuation of the output of acoustic vibrations from the driver unit. This rejection is respectfully

traversed.

35 U.S.C. 103 authorizes a rejection where to meet the claim, it is necessary to modify a single reference or to combine it with one or more other references. After indicating that the rejection is under 35 U.S.C. 103, the examiner should set forth in the Office action (1) the relevant teachings of the prior art relied upon, preferably with reference to the relevant column or page number(s) and line number(s) where appropriate, (2) the difference or differences in the claim over the applied reference(s), (3) the proposed modification of the applied reference(s) necessary to arrive at the claimed subject matter, and (4) an explanation why such proposed modification would have been obvious to one of ordinary skill in the art at the time the invention was made. See M.P.E.P. §706.02(j).

With respect to Item (4), it is respectfully submitted that the Office Action has not set forth motivation as to why one of ordinary skill in the art would ignore the specific guidance provided by the applied reference in favor of the precise relationships set forth in pending claims 1, 6, 11, and 16 absent impermissible hindsight. As discussed on page 9 of the instant application, in contrast to the dual chamber, triple-vented acoustical enclosure described by Tamura, the triple-vented acoustical enclosure of either embodiment of the present invention exhibits improved acoustical output over a broad operating band. In short, the speaker disclosed by Tamura is a narrow band (i.e., low frequency band) loudspeaker system that is not designed to improve acoustical output over a broad frequency band. Furthermore, the internal vent in the Tamura enclosure is specifically designed and used to minimize distortion due to loudspeaker cone excursions at frequencies lower than the resonant frequency (i.e., it sharpens the upper cutoff frequency of the bass speaker), but does not contribute to acoustical output within the normal operating band. In fact, Tamura teaches that even in the narrow low frequency band of interest in his system, the internal vent actually acts as a bypass circuit whose effect is to reduce the acoustical output from the external vents, as well as to reduce the level of the distortion.

In any event, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. See M.P.E.P. §2143, citing In re Mills, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990). A statement along the lines that modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made" because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. See M.P.E.P. §2143, citing Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993).

Finally, the characterization of certain limitations or parameters as obvious does not make the claimed invention, considered as a whole, obvious. It is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This burden can only be satisfied by an objective teaching in the prior art or by cogent reasoning that the knowledge is available to one of ordinary skill in the art. See In re Lalu, (747 F.2d 703, 223 U.S.P.Q. 1257 (Fed. Cir. 1984)). Furthermore, an Examiner may not rely on official or judicial notice [much less unsupported statements regarding what, to the Examiner, is well known] at the exact point where patentable novelty is argued, but must come forward with pertinent prior art. See Ex parte Cady, 148 U.S.P.Q. 162 (Pat. Off. Bd. App. and Inter. 1965).

In short, claims 1 and 11 positively recite the limitation "wherein a ratio of an acoustic mass of the internal vent to an acoustic mass of the second external vent is in a range of approximately 3/1 to 7/1" while claims 6 and 16 employ the limitation "wherein a ratio of an acoustic mass of the first external vent to an acoustic mass of the second external vent is in a range of approximately 15/1 to 30/1." Since the single applied reference does not teach these

limitations, and since the Office Action has not proffered any reasoning as to why one of ordinary skill in the art would have been motivated to depart from the teaching of the primary reference in favor of the claimed limitations, the Office Action has not set forth a "prima facie" case of obviousness. Since the adoption of the claimed limitations to the primary reference would necessarily convert the base speaker of Tamura to the broadband loudspeaker recited in the pending claims, thus changing the operation of the Tamura speaker, this fact alone demonstrates the clear lack of motivation for the modification suggested by the Office Action. It is well settled that if the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious. See M.P.E.P. § 2143, citing In re Ratti, 123 U.S.P.Q. 349 (CCPA 1959).

For all of the reasons set forth above, it is respectfully submitted that the Office Action has not set forth a "prima facie" case of obviousness with respect to claims 1, 6, 11, and 16. Thus, the Examiner is respectfully requested to reconsider and withdraw the 35 U.S.C. §103(a) rejection of the independent claims. Moreover, it is submitted that the various dependent claims are allowable based on the reasoning set forth regarding claims 1, 6, 11, and 16.

In light of the amendments and remarks presented above, it is respectfully submitted that the application is in condition for allowance, and such action is hereby solicited.

By this response, Applicant has made a sincere effort to place this case in final condition for allowance. However, if it is deemed that there still remain additional issues to be resolved, the Examiner is encouraged to call the Applicant's undersigned representative prior to taking any further formal action in this case.

Respectfully submitted,



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Attachments:

1. U.S. Patent No. 6,212,284
2. PTO-1449 Form
3. Appendix

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## APPENDIX

12. The loudspeaker as set forth in Claim 11, wherein the first means, second means, and third means have respective first, second and third acoustic masses.

17. The loudspeaker as set forth in Claim 16, wherein the first means, second means, and third means have respective first, second, and third acoustic masses.